

Bangor, 2nd, p. m. and 3rd, p. m.; St. Vincent, Minn., 3rd, a. m., and 5th, a. m., 12th, a. m., 26th, p. m., 27th, p. m. and 29th, a. m.; Beloit, the 21st, p. m. and Rochester, 30th, a. m.

Zodiacal Light.—*Connecticut.*—Southington, 30th, 31st. *Cuba.*—Havana, 1st, 2nd, 3rd, 23rd, 24th, 28th, 29th. *Indiana.*—New Corydon, 6th, 7th, 9th, 11th, 30th, 31st. *Iowa.*—Cresco, 31st; Monticello, 2nd. *Kansas.*—Lawrence, 6th, 9th, 10th, 29th, 30th, 31st. Yates Centre, 1st, 2nd, 29th, 30th, 31st. *Massachusetts.*—Cambridge, 3rd, 4th, 18th, 19th, 22nd, 23rd, 28th, 30th, 31st; Rowe, 30th, 31st; Somerset, 3rd, 4th, 22nd, 23rd, 30th, 31st; Williamstown, 2nd. *Minnesota.*—St. Vincent, 2nd, 3rd, 5th, 6th, 10th, 11th, 29th. *Nebraska.*—Clear Creek, 1st, 29th, 30th, 31st. *New York.*—Waterburg, 4th, 6th, 9th, 28th. *Ohio.*—Bellefontaine, 18th, 27th, 30th, 31st. *Pennsylvania.*—Dyberry, 31st. *Tennessee.*—Nashville, 2nd, 3rd, 6th, 7th, 8th, 9th, 11th, 30th, 31st. Abstract of Mr. Ohas. Hasselbrink's observations at Havana, Cuba, continued from the REVIEW for September, 1880. *October*, 6th, 1880, 8 p. m., inclination 40 degrees and at 8:30 p. m., 45 degrees to the south; intermittences few and incomplete; tint *warm* to bluish white; 9 p. m., obscured. Light visible on *October* 25th, 26th, 30th, 31st and *November*, 1st and 23rd. *November* 24th, from 6:30 p. m., visible, with marked intensity, inclination 45 degrees to south; during an intermittence, that portion of the milky way previously masked by the light became more visible. 25th, of good intensity and frequent intermittence. 26th, 27th and 28th, visible; 29th, from 6:30 p. m., great intensity, whitish, cone pretty well defined, intermittences well marked, base very luminous. 30th, same as 29th, intermittences very long and return of light slow, no effluvia.

OPTICAL PHENOMENA.

Mirage.—Portsmouth, N. C., 14th, exhibiting country and trees thirty miles distant. Genoa, Neb., 5th, 6th, 12th, 22d, 31st. Captain John O. Spicer, of schooner *Era*, on a voyage to Hudson's Bay and return, reports August 14th and 15th, 1879, in 67° 39' N., 80° 08' W., beset in ice, day pleasant and calm, land 32 miles and open water 16 miles to west; the refraction was so great that little pieces of ice in the water and the patches of snow on the land could be plainly seen, appearing to be about 6 degrees above horizon.

Halos.—From the 29th to the 31st of December, solar halos of great perfection were very generally observed in the Ohio, Upper Mississippi and Lower Missouri valleys. Halos of 22° radius and 46° radius were seen. In most cases prismatic colors distinctly appeared and parhelia or mock-suns, varying in number from two to five; brilliant contact arches were likewise observed. Halos with mock-suns were seen most frequently on the 29th in Iowa, on the 30th in Ohio, Indiana, Illinois and Missouri, and on the 31st in Michigan and Wisconsin.

MISCELLANEOUS PHENOMENA.

Meteors.—The following are the only meteors of interest reported during December, 1880: 9th Charlotte, N. C., soon after sunset, very brilliant in southwest part of heavens; moved slowly in a westerly direction; seemed to be about the size of the crown of a man's hat and was visible for nearly 10 minutes; it did not disappear suddenly but gradually grew smaller until it vanished near the western horizon. Jacksonburg, Ohio, p. m.—very brilliant. Aiken, S. C., 5:15 p. m.—brilliant meteor like a bursting rocket; a remarkable feature was the trail, which remained visible for more than 20 minutes as noted by the watch. During such time the straight trail was apparently changed into a wavy one by the wind's action. Mayport, Fla., at sunset, meteor, of intense whitelight, moving slowly toward the north from the zenith; was in sight some seconds. Chattanooga, Tenn.,—observed just before sunset; very brilliant; moved from a point southeast of zenith obliquely to the eastern horizon; exploded into fiery fragments; trail, reddish hue, drifted to the west and quickly disappeared. 10th, Mayport, Fla., 3 a. m.—brilliant light from the east, illuminating whole house, shortly followed by an explosion which jarred the house and awakened the family. Fayette, Miss., 5.40 a. m.—very brilliant; passed from east to west. 11th (10th?), Savannah, Ga., 2.50 a. m.—visible for nearly a minute; moved from east to west. It apparently burst, although no noise was heard. In bursting, very large fiery balls, scattered in every direction, left a trail of vaporous smoke for a few seconds. Observers state that it completely lighted the city and presented a most dazzling sight. 12th, Pioche, Nev., 4.45 a. m., course W. by NW.; light as day for about ten seconds. 13th, Little Rock, Ark., 4.50 p. m.—brilliant meteor; altitude, 45°; moving west. Disappeared 15° above horizon. 29th, Cairo, Ill., (no time),—very brilliant; color, green; moved from Orion southwestward, disappearing 10° above horizon, followed by a train of red light 20° long. Captain J. O. Spicer, of the schooner *Era*, in 63° 15' N., 64° 10' W., reports: November 12th, 1879, "at 11 p. m. saw one of the most brilliant meteors fall in the NE. illuminating the whole heavens, and at 11:45 p. m. another in the N.; many shooting stars observed all night and in all directions."

Earthquakes.—In connection with the numerous earthquakes on the Pacific coast it is noted as of possible interest, that violent eruptions of the volcano Mauna Loa, Hawaii, recommenced on December 10th, 1880. *California:* San Diego, 19th, 3:40 p. m., sharp shock—few seconds duration; motion from SE. to NW. Shocks were felt at San Luis Rey, San Juan, and Santa Anna at the same time. 21st, 11 p. m., duration few seconds; motion from SE. to NW. Los Angeles, 19th,